What Is Claimed Is:

1. A method for generating and enhancing video signals of an image comprising the steps of:

deriving at least one color-representative signal and a luminance signal representative of an image;

processing said luminance signal to produce a modified luminance signal representative of the low spatial frequency portion of said luminance signal;

subtracting said modified luminance signal from said luminance signal so as to produce a high spatial frequency luminance signal;

for at least selected pixels of said image amplifying said high spatial frequency luminance signal by an amount that varies as a function of the value of said modified luminance signal so as to produce an amplified high spatial frequency luminance signal; and

for said selected pixels of said image summing said modified luminance signal and said amplified high spatial frequency luminance signal so as to provide an enhanced luminance output signal.

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2. Method according to claim 1 further including the step of applying said at least one color-representative signal and said enhanced luminance output signal to means for transmitting or recording same or to means for generating and displaying a video image in response to said color representative signals and said enhanced output signal.

3. Method according to claim 1 including the step of limiting the values of said enhanced luminance output signal.

4. A method for generating and processing a video luminance signal comprising the steps of:

deriving three digital data stream signals representative of the red, green and blue components of an image;

combining said three digital data stream signals to produce a luminance data stream signal representative of the luminance of said image;

passing said luminance data stream signal through a low-pass spatial frequency filter so as to remove higher spatial frequency data and produce a modified luminance data stream signal representative of the low spatial frequency data portion of said luminance data stream signal;

subtracting said modified luminance data stream signal from said luminance data stream signal so as to produce a high spatial frequency luminance data stream signal;

amplifying said high spatial frequency luminance data stream signal by an amount that varies as a function of the value of said modified luminance data stream signal so as to produce an amplified high spatial frequency luminance data stream signal; and

summing said modified luminance data stream signal and said amplified high spatial frequency luminance data stream signal so as to provide an output data stream signal representative of finite local enhancement of said luminance data stream signal.

5. Method of claim 4 further including the step of limiting the values of said output data stream signal within predetermined limits.

6. A method for generating and processing a video luminance signal comprising the steps of:

deriving from a video imaging device a plurality of digital color-representative signals and a digital luminance signal representative of the pixels of an image acquired by said video imaging device;

processing said digital luminance signal to produce a low-pass digital luminance signal representative of the low spatial frequency portion of said digital luminance signal;

subtracting said low-pass digital luminance signal from said digital luminance signal so as to produce a high-pass digital luminance signal representative of the high spatial frequency portion of said digital luminance signal;

multiplying said high-pass digital luminance signal by a factor that varies as a function of the value of said low-pass digital luminance signal so as to produce a modified high-pass digital luminance signal; and

summing said low-pass digital luminance signal and said modified digital high-pass luminance signal so as to produce an output signal that constitutes a finite local enhancement of said digital luminance signal.

7. Method of claim 6 further including the step of limiting the values of said finite local enhancement output signal within predetermined limits.

8. A method for generating and processing a video luminance signal comprising the steps of:

deriving three digital data streams representative of the red, green and blue components of an image;

combining said three digital data streams to produce a first luminance digital data stream representative of the luminance of said image;

passing said first luminance digital data stream through a low-pass filter that removes higher spatial frequency data and produces a second luminance

digital data stream representative of the low spatial frequency data portion of said first luminance digital data stream;

subtracting said second luminance digital data stream from said first luminance digital data stream so as to produce a third luminance digital data stream representative of the high spatial frequency portion of said first luminance digital data stream;

multiplying said third luminance digital data stream by a gain factor that varies as a function of the value of said second luminance digital data stream so as to produce a fourth luminance digital data stream; and

summing said second luminance digital data stream and said fourth luminance digital data stream so as to provide an output digital data stream representative of finite local enhancement of said first luminance digital data stream.

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9. A method according to claim 8 further including the step of applying said color-representative signals and said output digital data stream to means for transmitting or recording same or to means for generating and displaying a video image in response to said color representative signals and said output digital data stream.

10. Method of claim 9 further including the step of limiting the values of said output digital data stream.

11. Apparatus for generating and processing video signals representative of an image comprising:

means for generating a plurality of digital color-representative signals corresponding to the color components of an image and a first digital luminance signal representative of the luminance of said image;

means for processing said first digital luminance signal to produce a second digital luminance signal representative of the low spatial frequency portion of said first digital luminance signal;

means for subtracting said second digital luminance signal from said first digital luminance signal so as to produce a third digital luminance signal representative of the high spatial frequency component of said first digital luminance signal;

means for multiplying said third digital luminance signal by an amount that varies as a function of the value of said second digital luminance signal so as to produce a fourth digital luminance signal; and

means for summing said second digital luminance signal and said fourth digital luminance signal so as to provide a digital luminance output signal constituting a finite local enhanced version of said first digital luminance signal.

12. Apparatus according to claim 11 further including means for converting said color-representative signals and said digital luminance output signal to corresponding analog signals, and means for applying said analog signals to means for transmitting or recording said analog signals.

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13. Apparatus according to claim 11 further including means for converting said color-representative signals and said digital luminance output signal to corresponding analog signals, and means for applying said analog signals to display means for generating and displaying video reproductions of said images in response to said analog signals.

14. Apparatus according to claim 11 wherein said means for generating said color-representative signals and said luminance signal comprises a video camera.

15. Apparatus according to claim 14 wherein said camera produces an analog video signal representative of images captured by said camera, and further including means for converting said analog video signal to said digital color representative signals and said first digital luminance signal.

16. Apparatus for generating an enhanced video luminance signal comprising:

means for deriving three digital data stream signals representative of the red, green and blue color components of an image;

means for combining said three digital data stream signals so as to produce a first luminance data stream signal representative of the luminance of said image;

means including a low-pass filter for processing said first luminance data stream signal so as to remove therefrom higher spatial frequency data and produce a second luminance data stream signal representative of the low spatial frequency data portion of said first luminance data stream signal;

means for subtracting said second luminance data stream signal from said first luminance data stream signal so as to produce a third luminance data stream signal representative of the high spatial frequency data portion of said first luminance data stream signal;

means operative for each pixel of said image for multiplying said third luminance data stream signal by an amount that varies as a function of the value of said second luminance data stream signal so as to produce a fourth luminance data stream signal; and

means operative for each pixel of said image for summing said second luminance data stream signal and said fourth luminance data stream signal so as to produce an output luminance data stream signal constituting the finite local enhanced version of said first luminance data stream signal.

17. Apparatus according to claim 16 further including means for limiting the values of said output luminance data stream signal within predetermined limits.

18. Apparatus according to claim 16 wherein said means for deriving said three digital data stream signals representative of the red, green and blue color components of an image comprises a video camera.

19. Apparatus for generating and processing video signals comprising:

means for deriving an input luminance digital data stream signal and a digital color-representative signals representative of a image;

a low pass FIR filter for processing said input luminance digital data signal so as to remove therefrom higher spatial frequency data and produce an modified luminance digital data stream signal representative of the lower spatial frequency data portion of said input luminance digital data signal;

means for subtracting said modified luminance digital data stream signal from said input luminance digital data stream signal so as to produce a higher spatial frequency digital data stream signal;

means responsive to said higher spatial frequency data stream signal and said modified luminance data stream signal for amplifying said higher spatial frequency data stream signal as a function of the value of said modified luminance data stream signal, whereby to produce a boosted higher spatial frequency luminance data stream signal; and

means for summing said boosted higher spatial frequency luminance data stream signal and said modified luminance data stream signal so as to provide an output luminance digital data stream signal that constitutes an enhanced version of said input luminance digital data stream signal.

20. Apparatus according to claim 19 further including means for limiting the values of the luminance data in said output luminance data stream signal.

21. Apparatus for generating and processing video signals representative of an image comprising:

a video camera for generating an output video signal representative of an image captured by said camera;

means responsive to said output video signal for generating red, green and blue color signals representative of said image;

means responsive to said red, green and blue color signals for deriving therefrom a first luminance digital data signal and color data signals representative of said image;

a low pass FIR filter for processing said first luminance digital data signal so as to remove therefrom higher spatial frequency data and produce a second luminance digital data signal representative of the lower spatial frequency data portion of said first luminance digital data signal;

means for subtracting said second luminance digital data signal from said first luminance digital data signal so as to produce a third luminance digital data signal representative of the higher spatial frequency data of said first luminance digital data signal;

means responsive to said third luminance digital data signal and said second luminance digital data signal for amplifying said third digital data signal as a function of the value of said second luminance digital data signal, whereby to produce a fourth luminance digital data signal; and

means for summing said fourth luminance digital data signal and said second luminance digital data signal so as to provide a luminance digital data output signal which constitutes an enhanced version of said first luminance digital data signal.

22. Apparatus according to claim 21 further including means for applying said color signals and said luminance digital data output signal to means for transmitting or recording said color signals and said luminance digital data output signal.

23. Apparatus according to claim 21 further including means for applying said color signals and said luminance digital data output signal to display means for generating and displaying a video reproduction of said image in response to said color signals and said luminance digital data output signal.

24. Apparatus according to claim 21 further including means for limiting the values of said enhanced luminance data signal according to predetermined maximum and minimum limits.

25. A method for generating a video luminance signal comprising the steps of:

deriving at least one color-representative signal and a first luminance signal representative of an image;

processing said luminance signal to produce a second low-pass luminance signal representative of the low spatial frequency portion of said first luminance signal;

subtracting said second low-pass luminance signal from said first luminance signal so as to produce a third high-pass luminance signal representative of the high spatial frequency portion of said first luminance signal;

for one or more pixels of said image amplifying said third high-pass luminance signal by an amount that varies as a function of the value of said second low-pass luminance signal so as to produce a fourth amplified high-pass luminance signal; and

for said one or more pixels of said image summing said second low-pass luminance signal and said fourth amplified high-pass luminance signal so as to produce an output luminance signal that constitutes a finite local enhancement of said first luminance signal.

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26. A method for generating a video luminance signal comprising the steps of:

deriving three digital data streams representative of the red, green and blue components of an image;

combining said three digital data streams to produce a first luminance data stream representative of the brightness of said image;

passing said first luminance data stream through a low-pass filter that removes higher spatial frequency data and produces a second luminance data stream representative of the low spatial frequency data portion of said first luminance data stream;

subtracting said second luminance data stream from said first luminance data stream so as to produce a third luminance data stream representative of the high spatial frequency portion of said first luminance data stream;

for each pixel of said image amplifying said third luminance data stream by an amount that varies as a function of the value of said second luminance data stream so as to produce a fourth data stream representative of the amplified high spatial frequency luminance data; and

for each pixel of said image summing said second luminance data stream and said fourth luminance data stream so as to provide an output data stream that comprises a finite local enhancement of said first luminance data stream.

27. A method according to claim 26 further including the step of selectively amplifying the data of said third luminance data stream representative of the luminance of a first group of selected pixels according to a first gain table and amplifying the data of said third luminance data stream representative of the

luminance of a second group of selected pixels according to a different gain table.

28. A method according to claim 27 wherein the pixels of said first group form a first selected region of said image and the pixels of said second group form a second selected region of said image.

29. A method according to claim 28 wherein said first region is bordered by said second region.

30. A method according to claim 28 wherein said first region is surrounded by said second region.

31. A method according to claim 28 wherein for said first group of pixels their luminance value in said output data stream is greater than their luminance value in said first luminance data stream, and for said second group of pixels their luminance value in said output data stream is less than their luminance value in said first luminance data stream.

32. Apparatus for generating video signals representative of an image comprising:

means for generating a plurality of color-representative signals corresponding to the color components of an image and a luminance signal representative of the brightness of said image;

means for processing said luminance signal to produce a modified luminance signal representative of the low spatial frequency portion of said luminance signal;

means for subtracting said modified luminance signal from said luminance signal so as to produce a high spatial frequency luminance signal;

means for amplifying said high spatial frequency luminance signal for certain selected pixels of said image by an amount that varies according to a first predetermined gain table as a function of the value of said modified luminance signal and for amplifying said high spatial frequency luminance signal for other selected pixels by an amount that varies according to a second gain table as a function of the value of said modified luminance signal, whereby to produce an amplified high spatial frequency luminance signal; and

means operative for each pixel of said image for summing said modified luminance signal and said amplified high spatial frequency luminance signal so as to provide an output signal representative of the finite local enhanced version of said luminance signal.